REMARKS

In the Official Action, claim 1 was rejected under 35 U.S.C. §103(a) as being obvious and thus unpatentable. However, claim 1 was retained in the present continuation application for priority purposes, and it now has been withdrawn and canceled from the present application. Thus, no further discussion of claim 1 is necessary.

On the merits, claims 12 and 15-17 were rejected under 35 U.S.C. §103 as being obvious and thus unpatentable over a combination of three references, namely Strong, Ishizaki, and Beckman. Claims 13, 14, and 30-37 were rejected under that same statutory section in view of the same three references, and further in view of a fourth reference, namely Androulakis. Also, claims 18, 23-25, 28, and 29 were rejected under Section 103 as being unpatentable over the Strong and Ishizaki references when their disclosures are taken further in view of the Cherevatsky patent. Further, claims 19 and 20 were rejected under Section 103 as being unpatentable over the Strong, Ishizaki, and Cherevatsky references as discussed above, when their disclosures were taken in view of a fourth reference, Androulakis. In addition, claims 26 and 27 were rejected under Section 103 as being unpatentable over the Strong, Ishizaki, and Cherevatsky patents, when their disclosures were taken in view of the Beckman patent. Finally, claims 38 and 39 were rejected under 35 U.S.C. §103 as being unpatentable over the Strong, Ishizaki, Beckman and Androulakis references, when their disclosures were taken in view of a fifth reference, namely Cherevatsky. The Examiner asserts that the above-mentioned claims are obvious in view of combinations of at least three to five references, and others with additional subject matter.

In the Office Action Summary, the Examiner also referred to claims 2-11 as being part of the application. However, those claims were only present in the

parent application and are not present in the present continuation application. Thus, nothing further needs to be mentioned relative to claims 2-11.

Finally, the Examiner indicated that the subject matter of claims 21 and 22 was allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims.

By this Amendment, claim 1 has been canceled as mentioned above, claims 12, 14, and 18-30 have been amended in various ways, and claims 13 and 31 have been canceled. Thus, at this time, claims 12, 14-30, and 32-39 remain for consideration in the case.

The Examiner makes various arguments concerning combinations of three, four and five references, alleging that it would have been obvious to persons or ordinary skill in the art to combine the references in the manner indicated. In addition, the Examiner further states that additional features found in the claims - even though not found in the prior art references - would have been obvious, and motivated by various considerations and factors. It is respectfully submitted, however, that it is improper for three or more references to be combined in the manner stated, particularly where there are additional features of the claims not found in the references. It is obvious that the Examiner is using hindsight as a basis for the rejections based on a review of the applicant's invention as defined by the claims. As the Examiner is aware, the use of hindsight is not permitted in combining references in order to form the basis of rejections of claims.

By this Amendment, the subject matter of former claim 13 has been added to independent claim 12 in order to further distinguish the subject matter from the prior art. In addition, former claim 13 has been cancelled from the case.

It is submitted that none of the prior art references, taken in any permissible combination, disclose or suggest the inventive subject matter of amended claim 12. None of the references disclose or suggest, or disclose any motivation, for

adding heating mechanisms to an outer shell member in a fuel tank for controlling the rate of evaporation of material contained in the inner shell member of the tank. It is also submitted that the Androulakis reference does not set forth a heating mechanism as disclosed in the present application and as presented in amended claim 12. As a result, even a combination of references, even assuming that they could be properly combined, does not disclose or suggest the subject matter of claim 12.

The dependency of dependent claim 14 has also been amended in order to make it dependent from amended claim 12. Previously, it was dependent from claim 13, which now has been canceled from the case. By this Amendment, the other two independent claims remaining in the case, namely claims 18 and 30, have been amended.

Claim 18 has been amended to point out that it relates to a "stratospheric vehicle" having a fuel tank, the fuel tank having the various features set forth in the claim. Claims 19-29 are dependent from claim 18 and have similarly been amended to reflect the fact that claim 18 now claims a stratospheric vehicle having a fuel tank, rather than a fuel tank by itself. It is submitted that none of the prior art references disclose or suggest a stratospheric vehicle having a fuel tank, let alone the fuel tank having all of the elements and features as contained in independent claim 18.

Independent claim 30 has been amended to include a second heating mechanism formerly contained in dependent claim 31, which now has been cancelled from the case. None of the prior art references cited by the Examiner disclose the use of heating mechanisms on an outer shell member of a fuel tank for both controlling icing of the fuel tank during use and for controlling the rate of evaporation of the material contained in the inner shell member. Again, as pointed out above, the Androulakis reference cited by the Examiner as disclosing heating

mechanisms does not disclose or suggest similar heating mechanisms as set forth in the present invention. In addition, the Examiner's argument relative to employing a second heating mechanism is merely that it would have been an obvious matter of engineering design choice, motivated by the intended use and recognized problem to be solved. Again, it is believed that such a motivation argument is based on the improper use of hindsight after consideration of the Applicant's invention.

In view of the foregoing, it is submitted that all of the claims remaining in the case, namely claims 12, 14-30, and 32-39 are in proper form and patentably distinguish from the prior art. Accordingly, allowance of the claims and passage of the application to issuance are respectfully solicited.

Respectfully submitted,

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"VERSION WITH MARKINGS TO SHOW CHANGES MADE"

In The Claims:

Claim 1 has been cancelled.

Claim 12 has been replaced with the following:

12. (Amended) A lightweight fuel tank comprising:

an outer spherical shell member;

an inner spherical shell member positioned inside said outer shell member; and

said inner shell member and said outer shell member being positioned to provide an insulating radial gap between them; [and]

a first port member in said outer shell member for evacuation of said radial gap to a vacuum, and to provide access for filling said inner shell member with hydrogen material; and

a first heating mechanism on said outer shell member for controlling the rate of evaporation of material contained in said inner shell member;

said inner shell member having an outer surface and an inner surface, said outer surface being coated with a low emissivity material;

said outer shell member having an outer surface and an inner surface, said inner surface being coated with a low emissivity material.

Claim 13 has been canceled.

Claim 14 has been replaced with the following:

14. (Amended) The lightweight fuel tank as set forth in claim [13] 12 comprising a second heating mechanism on said outer surface of said outer shell member for controlling icing of said fuel tank during use.

Claims 18-30 have been replaced with the following:

18. (Amended) A stratospheric vehicle having a fuel tank, said [A lightweight] fuel tank comprising:

an outer spherical shell member;

an inner spherical shell member positioned inside said outer shell member;

said inner shell member and said outer shell member being positioned to provide an insulating radial gap between them;

said inner shell member having an outer surface and an inner surface, said outer surface being coated with a low emissivity material; and

said outer shell member having a sandwich construction with an inner skin member made of a lightweight metal material, an outer skin member made of a lightweight composite material, and a core member made of a low thermal conduction insulating material.

19. (Amended) The stratospheric vehicle [light weight fuel tank] as set forth in claim 18 further comprising a first heating mechanism on said outer shell member for controlling the rate of evaporation of material contained in said inner shell member.

20. (Amended) The stratospheric vehicle [light weight fuel tank] as set forth in claim 19 comprising a second heating mechanism on said outer surface of said outer shell member for controlling icing of said fuel tank during use.

21. (Amended) The stratospheric vehicle [lightweight fuel tank] as set forth in claim 18 wherein said inner skin member is an aluminum material, said outer skin member is a Kevlar material, and said core member is a low density foam material.

22. (Amended) The stratospheric vehicle [light weight fuel tank] as set forth in claim 18 wherein said inner shell member is made of an aluminum material and said outer shell member is made of a sandwich of titanium, Kevlar and Nomex materials.

23. (Amended) The stratospheric vehicle [light weight fuel tank] as set forth in claim 18 wherein said low emissivity material is a flash of a copper material.

24. (Amended) The stratospheric vehicle [light weight fuel tank] as set forth in claim 18 wherein said inner skin member is coated with a low emissivity material.

25. (Amended) The stratospheric vehicle [light weight fuel tank] as set forth in claim 24 wherein said low emissivity material is copper.

26. (New) The stratospheric vehicle [light weight fuel tank] as set forth in claim 18 further comprising a first port member in said outer shell member for evacuation of said radial gap to a vacuum, and to provide access for filling said inner shell member with hydrogen material.

27. (Amended) The stratospheric vehicle [light weight fuel tank] as set forth in claim 26 further comprising a second port member in said inner shell member for filling said inner shell member with a hydrogen material, said second port member having a valve mechanism.

28. (Amended) The stratospheric vehicle [light weight fuel tank] as set forth in claim 18 wherein said inner and outer shell members are connected at three locations, namely two opposing equatorial external support positions and a port member.

29. (Amended) The stratospheric vehicle [light weight fuel tank] as set forth in claim 18 wherein said inner and outer shell members of different materials are connected by a friction welded insert member.

30. (Amended) A lightweight fuel tank comprising:

an outer spherical shell member;

an inner spherical shell member positioned inside said outer shell member;

said inner shell member and said outer shell member being positioned to provide an insulating radial gap between them; [and]

a first heating mechanism on said outer shell member for controlling the rate of evaporation of material contained in said inner shell member[.]; and

a second heating mechanism on said outer shell member for controlling icing of said fuel tank during use.

said inner shell member and said outer shell member being positioned to provide an insulating radial gap between them; [and]

a first heating mechanism on said outer shell member for controlling the rate of evaporation of material contained in said inner shell member[.]; and

a second heating mechanism on said outer shell member for controlling icing of said fuel tank during use.

Claim 31 has been canceled.